

Rejection of Claims 11-16 Under 35 U.S.C. 103(a) Over U.S. Patent 5,128,410 to Ilendra et al.

Claims 11-16 have been rejected by the Examiner under 35 U.S.C. 103(a) over U.S. Patent 5,128,410 to Ilendra et al. This rejection is respectfully traversed. Reconsideration and withdrawal thereof are requested.

The Present Invention

A first embodiment of the present invention as recited in claim 11, as amended, relates to a resin composition (c) which is based on polyethylene, comprising 99.3% - higher than 50% of a polyethylene resin (a1) having a melt flow rate (MFR) according to ASTM D 1238 (190°C, 2160 g load) in the range from 0.001 to 0.5 g/10 min. and a density in the range from 0.945 to 0.980 g/cm<sup>3</sup>, 0.2-20% of a modified ethylene/ $\alpha$ -olefin copolymer (a2) which is modified by having grafted thereon an unsaturated dicarboxylic acid or its anhydride and has a density in the range from 0.900 to 0.940 g/cm<sup>3</sup> and 0.5-30% of an ethylene/vinyl alcohol copolymer (b), based on the weight of the composition, and having a melt flow rate (MFR) according to ASTM D 1238 (190°C, 2160 g load) in the range from 0.001 to 0.2 g/10 min., a density in the range from 0.940 to 0.970 g/cm<sup>3</sup> and an Izod impact strength (with notch), determined according to ASTM D 256 at minus 40°C, of at least 100 J/m.

A second embodiment of the present invention as recited in claim 12, as amended, relates to a resin composition (c) which is based on polyethylene, comprising 99-65% of a polyethylene resin (a1) having a melt flow rate (MFR) according to ASTM D 1238 (190°C, 2160 g load) in the range from 0.001 to 0.5 g/10 min. and a density in the range from 0.945 to 0.980 g/cm<sup>3</sup>, 0.5-15% of a modified ethylene/ $\alpha$ -olefin copolymer (a2) which is modified by having grafted thereon an unsaturated dicarboxylic carboxylic acid or its anhydride and has a density in the range from 0.900 to 0.940 g/cm<sup>3</sup> and 1-25% of an ethylene/vinyl alcohol copolymer (b), based on the weight of the composition, and having a melt flow rate (MFR) according to ASTM D 1238 (190°C, 2160 g load) in the range from 0.001 to 0.2 g/10 min., a density in the range from 0.940 to 0.970 g/cm<sup>3</sup> and an Izod impact strength (with notch), determined according to ASTM D 256 at minus 40°C, of at least 100 J/m.

U.S. Patent 5,128,410 to Ilendra et al.

Claim 43 of the '410 patent comprises a blend of high-density polyethylene and polar polymer selected from the group consisting of ethylene-vinyl alcohol, polyester, poly(vinyl chloride) and poly(vinylidene chloride). The description at col. 6, lines 63-66 recites that low-density polyethylene, usually

branched, has a density of about 0.91-0.94 g/cc and high-density polyethylene has a density above 0.95 g/cc. The Examiner also refers to the Examples and to claim 10 of the '410 patent to support his position that the ungrafted thermoplastic polyolefin is present at high levels such as 80%. However, note that claim 10 is dependent on claims 5 and 1.

Distinctions Between the Present Invention and U.S. Patent 5,128,410 to Ilendra et al.

Claims 11 and 12 have been amended by changing the phrase "unsaturated carboxylic acid or its derivative" to read --unsaturated dicarboxylic acid or its anhydride--. That is, in the present invention, a modified ethylenic copolymer (a2), modified by having grafted an unsaturated dicarboxylic acid or anhydride thereof, is incorporated as a component of a resin composition based on polyethylene.

In contrast to the present invention, U.S. Patent 5,128,410 to Ilendra et al., in an embodiment that appears most relevant to the present invention (e.g. claim 33), is directed to a polymer blend of polar polymer(s) with non-polar polymer(s). The non-polar polymer may comprise a graft copolymer having grafted thereon a methacrylate chain polymer derived from monoacid ester in a weight ratio to the trunk polyolefin of 1:9 to 4:1. This teaching of Ilendra et al. is readily distinguishable from the

present invention, which uses a dicarboxylic acid or anhydride thereof. Moreover, the weight ratios of the present invention, as recited in claims 17-18, are clearly distinguishable from the weight ratio disclosed in U.S. Patent 5,128,410 to Ilendra et al. That is, a weight ratio of 1:9 to 4:1 is much greater than the range of 0.05-5% by weight as recited in claims 17 and 18.

The amount of unsaturated dicarboxylic acid or its anhydride grafted on the modified lower density ethylenic copolymer component according to the present invention should preferably be in the range from 0.05 to 5% by weight for a favorable product, as discussed on page 15, lines 3-8 of the present specification and as recited in claims 17 and 18. The amount of grafted unsaturated monoacid ester monomer of U.S. Patent 5,128,410 to Ilendra et al. expressed in a weight ratio to the trunk polymer should be in the range of 1:9 to 4:1, which corresponds to a grafting amount of over 10% by weight. For instance, when attempting to graft maleic anhydride onto an ethylene/ $\alpha$ -olefin copolymer, the resulting graft-copolymer tends to depolymerize at the grafting temperature. Further, such a high grafting amount as 10% by weight is hardly obtainable in practice.

Finally, the results set forth in the Examples of the specification with respect to the bottles of the present invention are not taught or suggest by U.S. Patent 5,128,410 to Ilendra et al.

In summary, Applicants respectfully submit that it is not obvious to replace the methacrylate ester of U.S. Patent 5,128,410 to Ilendra et al. with an unsaturated dicarboxylic acid or its anhydride, such as maleic anhydride, as in the present invention. Moreover, U.S. Patent 5,128,410 to Ilendra et al. does not disclose or suggest the weight ratios as recited in claims 17 and 18.

In view of the amendments to the claims and in view of the remarks hereinabove, reconsideration and withdrawal of the rejection of claims 11-16 under 35 U.S.C. 103(a) as being obvious over U.S. Patent 5,128,410 to Ilendra et al. are respectfully requested.

Rejection of Claims 11-15 Under the Judicially Created Doctrine of Obviousness-type Double Patenting as Being Unpatentable Over Claim 7 of U.S. Patent 6,214,426

Claims 11-15 are rejected by the Examiner under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claim 7 of U.S. Patent 6,214,426. This rejection is respectfully traversed. Reconsideration and withdrawal thereof are requested.

U.S. Patent 6,214,426 corresponds to the parent application of the present application.

Applicants respectfully submit that the claimed resin composition claims are patentably distinct due to the separate

classification relative to the laminated multi-layered articles claimed in U.S. Patent 6,214,426. Indeed, if faced with the present claims in combination with the patented claims of U.S. Patent 6,214,426, an Examiner would generally issue a restriction requirement arguing that these inventions are separately classified and examination of both groups of claims would create an undue burden. Thus, the double patenting rejection is traversed for the same reasons.

If the Examiner has any questions concerning this application, he is requested to contact the undersigned at (703) 205-8000 in the Washington, D.C. area.

If necessary, the Commissioner is hereby authorized in this, concurrent, and future replies, to charge payment or credit any overpayment to Deposit Account No. 02-2448 for any additional fees required under 37 C.F.R. § 1.16 or under 37 C.F.R. § 1.17; particularly, extension of time fees.

Respectfully submitted,

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VERSION WITH MARKINGS TO SHOW CHANGES MADE

IN THE CLAIMS

The claims have been amended as follows:

Claim 11 (Amended) A resin composition (c) which is based on polyethylene, comprising

99.3% - higher than 50% of a polyethylene resin (a1) having a melt flow rate (MFR) according to ASTM D 1238 (190°C, 2160 g load) in the range from 0.001 to 0.2 g/10 min. and a density in the range from 0.945 to 0.980 g/cm<sup>3</sup>,

0.2-20% of a modified ethylene/ $\alpha$ -olefin copolymer (a2) which is modified by having grafted thereon an unsaturated dicarboxylic [carboxylic] acid or its anhydride [derivative] and has a density in the range from 0.900 to 0.940 g/cm<sup>3</sup> and

0.5-30% of an ethylene/vinyl alcohol copolymer (b), based on the weight of the composition,

and having a melt flow rate (MFR) according to ASTM D 1238 (190°C, 2160 g load) in the range from 0.001 to 0.2 g/10 min., a density in the range from 0.940 to 0.970 g/cm<sup>3</sup> and an Izod impact strength (with notch), determined according to ASTM D 256 at minus 40°C, of at least 100 J/m.

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Claim 12 (Amended) A resin composition (c) which is based on polyethylene, comprising

99-65% of a polyethylene resin (a1) having a melt flow rate (MFR) according to ASTM D 1238 (190°C, 2160 g load) in the range from 0.001 to 0.5 g/10 min. and a density in the range from 0.945 to 0.980 g/cm<sup>3</sup>,

0.5-15% of a modified ethylene/ $\alpha$ -olefin copolymer (a2) which is modified by having grafted thereon an unsaturated dicarboxylic [carboxylic] carboxylic acid or its anhydride [derivative] and has a density in the range from 0.900 to 0.940 g/cm<sup>3</sup> and

1-25% of an ethylene/vinyl alcohol copolymer (b), based on the weight of the composition,

and having a melt flow rate (MFR) according to ASTM D 1238 (190°C, 2160 g load) in the range from 0.001 to 0.2 g/10 min., a density in the range from 0.940 to 0.970 g/cm<sup>3</sup> and an Izod impact strength (with notch), determined according to ASTM D 256 at minus 40°C, of at least 100 J/m.

Claims 17-18 have been added.